

## Cardiovascular Disorders – Research on Methods

### PCV145

#### PREDICTING HEALTHCARE EXPENDITURES AND UTILIZATION IN PATIENTS WITH DYSLIPIDEMIA USING THE UPDATED CHARLSON COMORBIDITY INDEX (CCI) AND PRIOR EXPENDITURES

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**OBJECTIVES:** To assess the utility of the updated Charlson Comorbidity Index (CCI) and prior utilization for the prediction of healthcare expenditures and utilization in patients with dyslipidemia. **METHODS:** Data were retrieved from the Medical Expenditure Panel Survey (MEPS) Panel 12 (2007-2008) for this retrospective cohort study. Annual healthcare expenditures, the original CCI (CCI-1), and the updated CCI (CCI-2) scores were calculated for patients who had dyslipidemia in 2007. Adjusted R<sup>2</sup> from linear regression models were used for the estimation of log-transformed healthcare expenditures (COST) in 2008. C statistics from logistic regression models were used to compare the predictive power in the risk of hospitalizations ( $\geq 1$  admission), risk of emergency department visits ( $\geq 1$  visit), and high expenditures ( $\geq 90$ th percentile of COST) in 2008. **RESULTS:** The cohort included 1,751 patients with dyslipidemia. The mean (SD) age was 60.7 (14.0) years, and 52% were female. Log-transformed prior-year expenditures showed better power than the CCI-1 or CCI-2 in predicting log-transformed COST (adjusted R<sup>2</sup> = 22.4% vs. 13.2% or 14.4%) and individuals incurring  $\geq 90$ th percentile of COST ( $c = 0.779$  vs.  $0.690$  or  $0.704$ ). The CCI-2 was a better predictor of the risk of hospitalizations and the risk of emergency department use ( $c = 0.674, 0.644$ ) than either the CCI-1 ( $c = 0.660, 0.629$ ) or log-transformed prior-year expenditures ( $c = 0.667, 0.624$ ). **CONCLUSIONS:** In a U.S. nationally representative sample of patients with dyslipidemia, prior-year expenditures appeared to be the best predictor of future healthcare expenditures, but the updated CCI was a better predictor of the risk of hospitalizations or emergency department use. Compared with the original CCI, the updated CCI showed improved predictive performance.

### PCV146

#### HOW HAVE QUALITY CHECKLISTS IMPROVED THE QUALITY OF PUBLISHED ECONOMIC EVALUATIONS? AN EXAMPLE OF VENOUS THROMBOEMBOLISM (VTE) PROPHYLAXIS

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**OBJECTIVES:** Standard quality checklists for economic evaluation (EE) exist and are referred to by journal editors. In addition, there are country- and disease-specific EE guidelines available. We examined if the existence of these checklists and guidelines improve the quality of published EE. **METHODS:** The evaluation was performed for a single therapeutic area, VTE prophylaxis in total hip and knee replacement, to ensure that the studies and interventions were comparable. A systematic review of published literature written in English was conducted using EMBASE, Medline, Cochrane Library, NHS EED, Econlit in July 2010. A number of EE parameters were extracted from each eligible publication, and were analysed over time. The impact of the VTE specific EE guidelines on the quality of published EEs was assessed. A subset of the articles for the UK were evaluated in regards to their adherence to the Drummond quality checklist as well as to the selected items of the NICE reference case. **RESULTS:** Sixty-seven articles were selected for the review, including 13, 24, 23 and 7 articles in the year <1996, 1996–2000, 2001–2005 and >2005, respectively. The quality of EEs had generally advanced over time: the time horizon increased, models became more sophisticated, and probabilistic sensitivity analysis was used more frequently. There was a sense of improvement regarding the quality of published EEs after the introduction of the VTE-specific EE guidelines, although a number of recent publications did not refer the guidelines. Few quality requirements from the Drummond checklist were not addressed in the eight UK-specific publications. The adherence to the NICE reference case among the latest UK publications was high. **CONCLUSIONS:** It is questionable whether the quality checklists have contributed any significant improvements to the quality of published EEs. And so there is a need to strengthen the awareness of editors on the availability of the quality checklists and guidelines for EE.

### PCV147

#### FRAMINGHAM RISK SCORE IN HEALTH ECONOMIC MODELLING: A EUROPEAN PERSPECTIVE

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**OBJECTIVES:** Many clinical practice guidelines recommend that providers and patients base their treatment decisions regarding coronary heart disease (CHD) prevention on the assessment of underlying risk. The need to predict the risk of an event in CHD is of importance when modelling the cost-effectiveness of lipid-modification therapies where the outcome is determined by the risk of a CHD event and the change in risk due to the intervention. Risk score equations have been derived from cohort studies or randomised trials and usually estimate the risk of having a CHD event over 5 to 10 years. The Framingham risk score (FRS) is the most famous and used risk calculator and its many adaptations are used to predict the risk for very different populations. In this study we investigate FRS's development into a global tool to estimate CHD events, focussing on its use in health economic modelling to demonstrate the efficacy of lipid modifying therapies in European populations. **METHODS:** A systematic search was undertaken in Embase to identify European health economic studies using FRS. The studies were assessed for information about the implementation of the FRS and any results of the validation of the predicted risk. **RESULTS:** There exist several studies employing the FRS to

evaluate the cost-effectiveness of interventions for CHD. However, the Framingham cohort differs from many groups to which it has been applied. There have been several attempts to recalibrate FRS to better its performance toward European populations with varying success. **CONCLUSIONS:** The Framingham risk score is still used in a European setting, even if it is often criticised to misrepresent the CHD risk. There are alternative risk functions, developed in order to better accommodate the risk of specific European populations. However, the use of FRS seems to still be a valid option for a Global or pan-European perspective.

### PCV148

#### MULTIPLE PROPENSITY SCORE ANALYSIS TO ESTIMATE TREATMENT EFFECTS IN PATIENTS WITH HEART FAILURE

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**OBJECTIVES:** Propensity scores (PS) are often used with binary treatments. However, in day to day practice multiple treatment options are often available. Therefore extension of binary propensity analysis to multiple PS will add to the empirical knowledge of use of PS. We used multiple PS to determine an association of individual angiotensin-converting enzymes inhibitors (ACEIs) on heart failure (HF) – hospitalization to illustrate the use of multiple PS. **METHODS:** The study was a retrospective analysis of a national cohort of patients diagnosed with HF identified from the Department of Veterans Affairs electronic medical records system. Multiple PS analysis was used to balance 47 baseline patient characteristics between the different ACEIs. Multiple PS were obtained from multinomial logistic regression. Effect of different ACEIs on time to HF-hospitalization was assessed using a multiple propensity weighted Cox proportional hazard model. Captopril was used as reference group. **RESULTS:** The study included 139,998 patients with 69.50% (97,293) on lisinopril, 21.79 % (30,503) on fosinopril, 8.41% (11,775) on captopril, and 0.30% (423) on enalapril. Multiple PS balanced nearly all differences between ACEIs groups. The adjusted hazards ratio from multiple PS-weighted Cox models were 0.800 (95% CI: 0.492-1.297) for enalapril, 0.971 (95% CI: 0.877-1.074) for fosinopril, and 1.005 (95% CI: 0.918-1.101) for lisinopril compared with captopril. **CONCLUSIONS:** We found no difference between four ACEIs in reducing the risk of HF-hospitalization. The use of multiple PS is a straightforward approach when comparing multiple treatments.

## Gastrointestinal Disorders – Clinical Outcomes Studies

### PGI1

#### INCIDENCE AND COST OF TREATMENT-EMERGENT COMORBID EVENTS IN AN INSURED POPULATION RECEIVING TREATMENT FOR CHRONIC HEPATITIS C (CHC) VIRUS INFECTION

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**OBJECTIVES:** To estimate the incidence of treatment-emergent comorbid events and incremental costs of treating these events in insured patients initiating pegylated interferon alfa (peg-alfa) and ribavirin (RBV) treatment for CHC. **METHODS:** In a retrospective cohort analysis of healthcare claims from a US insurer, we studied CHC patients newly treated with peg-alfa/RBV between 2006-2008 and continuously eligible for 12 months before/after treatment initiation. Treatment-emergent comorbid events were defined by new medical/pharmacy claims for predefined conditions in the 12 months after treatment initiation. The net incremental cost of treatment-emergent comorbidities was calculated as the difference between baseline and follow-up costs for these comorbidities and their treatment, excluding cost of peg-alfa/RBV. Baseline measures including age, gender, and region were used in a multivariate model to identify factors associated with treatment-emergent comorbid event charges. **RESULTS:** Of 3795 newly treated patients, 1269 (mean age=50.2 [SD 7.7], 36.2% female) met the selection criteria. The mean cost of peg-alfa/RBV treatment was \$25,612 (SD \$13,289). New treatment-emergent events were common, with 61.6% of patients having  $\geq 1$  event. Anemia was identified in 29.2% of patients, fatigue in 16.4%, depression in 11.5%, and neutropenia in 10.9%. The mean incremental cost for the pre-defined treatment-emergent comorbid events in the post-index period was \$6,377 (SD \$22,326); \$2,783 for medical and \$3,595 for pharmacy claims. Age  $\geq 60$  and female gender were significantly associated with higher charges in the multivariate model. **CONCLUSIONS:** In an insured US cohort with CHC, treatment-emergent comorbidities with peg-alfa/ RBV were common and increased cost by \$6000/treated patient. This excludes indirect costs and is therefore a conservative estimate. Costs might increase with the use of triple therapy with peg-alfa/RBV and a protease inhibitor, as additional treatment-emergent co-morbid events may be expected. Better-tolerated therapies that reduce the financial burden on the health care system costs and improve patient experience are desirable.

### PGI2

#### THE RELATIONSHIP BETWEEN ACUTE AND CHRONIC ACETAMINOPHEN EXPOSURE AND LIVER TOXICITY

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**OBJECTIVES:** The relationship between acute high dose acetaminophen and hepatotoxicity is well established, however little is known about the relationships with chronic acetaminophen ingestion. This study sought to determine the associations between acute and chronic prescription acquired acetaminophen use and hepatotoxicity. **METHODS:** This was a retrospective case control study of a 10% random sample of the Pharmetrics LifeLink commercial claims data from 1997-